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ABSTRACT

This paper describes processes undertaken by Central Missouri State University's Department of Curriculum and Instruction to prepare teacher candidates to create Web-based professional portfolios, Central's expectations for content coverage within the electronic portfolios, and evaluation procedures. It also presents data on portfolio construction from three semesters. Central's electronic portfolio is a collection of evidence and/or artifacts and reflective statements that demonstrate intellectual and professional development in relation to competency-based education program outcomes in a multimedia format. The portfolio is formally evaluated at three levels during the candidate's education program for appearance, function, quality of artifact selection, intellectual elegance, depth of reflection, and completeness. Periodic self-review is also encouraged. Data collected over the three semesters indicate that comprehensive training (for students and faculty) related to portfolio construction is a key factor in reducing anxiety and frustration in compiling and evaluating web-based interactive portfolios. The data show that lack of information or understanding regarding the development of electronic portfolios presents an obstacle to candidates' constructive efforts toward building a portfolio. Informing candidates early and often of requirements and expectations for portfolio construction contributes to candidate success. (Contains 10 references.) (SM)

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Assessing Pre-service Candidates' Web-Based Electronic Portfolios

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Introduction

Professional portfolios have become increasingly common in teacher education programs and can serve many purposes. Portfolios provide a form of teacher candidate assessment that is authentic and dynamic which supports the documentation of the complexities of learning, growth, and development related to teaching practices overtime (Barton & Collins, 1994; Krause, 1996; Stowell, Rios, McDaniel, & Kelly, 1993). Portfolios are reflective in nature (Tierney, 1994) and encourage critical reflection about teaching (Wolf, 1992). Additionally, the creation of a professional portfolio invites the learner to take responsibility for his/her own learning (Krause, 1996; Ross, 1996).

Traditionally portfolios in teacher education programs have taken the form of notebooks or folders filled with paperwork representing the efforts of teacher candidates throughout their education programs. Several issues related to utilizing a "paper" format for portfolio construction are problematic such as storage of portfolios, cost of compiling, handling of and potential damage to portfolios, loss, and evaluation. This paper describes the processes undertaken by a university Department of Curriculum and Instruction to prepare teacher candidates to create web-based professional portfolios, the expectations for content coverage of the electronic portfolios, evaluation procedures, and summarized data from the last three semesters.

At Central Missouri State University (Central) an electronic method for teacher candidates to record and organize portfolios that represent progress and learning has been developed. The utilization of electronic portfolios represents an effort to meet various goals. First, the use of electronic portfolios satisfies the accreditation requirement that institutions must comply with performance standards through the use of teacher candidate portfolios, as well as, a state requirement for student portfolios. Second, electronic portfolios enable self-assessment of progress and professional development for teacher candidates.

The electronic portfolio at Central is a collection of evidence and/or artifacts and reflective statements that demonstrate intellectual and professional development in relation to competency-based education program outcomes in a multimedia format. The program outcomes correlate with education courses, assignments, state-wide teacher assessment, and accreditation standards.

Early Childhood/Elementary/Middle School teacher candidates at Central are expected to meet competency-based program outcomes that comply with Missouri professional education standards and national standards. The program outcomes are categorized into the following ten theme areas:

Valuing	Thinking	Curriculum
Communicating	Social Interaction	Professionalism
Classroom Environment	Organization/Structure	
Global Understanding	Technology	

Mastery of the program outcomes must be demonstrated by teacher candidates across three levels: experiential, application, and integration. For each program outcome, students must provide evidence through an electronic portfolio to demonstrate understanding of the outcome at the appropriate level.

The first level of understanding for the program outcomes is the experiential level, which, indicates that the candidate can demonstrate exposure to an outcome. Within the theme area of communication for example, a teacher candidate can satisfy the third communication outcome (CO-3) at the experiential level by recognizing a variety of reading and writing strategies and models.

The second level, the application level, indicates that the candidate has demonstrated mastery of applying the principles of an outcome in a protected environment such as an education methods course. To meet CO-3 within the theme area of communication at the application level, the teacher candidate must demonstrate the use of a variety of reading and writing strategies and models.

The third level, the integration level, indicates that the candidate has demonstrated the ability to integrate the principles of an outcome into practice in a "real" professional setting. By using and promoting a variety of reading and writing strategies and models to meet student and professional needs, a teacher candidate demonstrates compliance with CO-3 at the integration level. Typically, although it is not always the case, teacher candidates progress through the levels sequentially first incorporating an artifact into the electronic portfolio at the experiential level and later replacing that artifact with another that demonstrates mastery at a higher level.

Portfolio Format

The electronic portfolio contains artifacts that address the program outcomes in the ten theme areas and reflective narratives written to explain how an artifact demonstrates mastery of the program

outcome it addresses. The incorporation of some type of teaching artifact and written reflections are common elements of most professional portfolios for educators (Wolf, 1996). Types of evidence that are appropriate artifacts include personal data such as awards, resumes, transcripts; lesson plans and/or units; strategies used for instruction, assessment, and classroom management; video clips of work with children; samples of children's work; assignments from university courses; and documentation of civic, community, and professional participation. The reflective narrative to match each artifact describes the artifact and explains, 1) why an artifact is selected to represent an outcome; 2) which outcome(s) are mastered; and 3) how the specific artifact shows mastery of the outcome(s) indicated by the teacher candidate.

During the pilot semester the lack of a standard format presented a significant obstacle to the purpose of creating a professional portfolio. With the first group of candidates it became evident that a standardized portfolio structure and format would be advantageous not only to the teacher candidates creating portfolios but also to the faculty responsible for evaluating the portfolios. In fact, research has shown that effective construction of professional portfolios by teacher candidates requires specific information about procedures for building a portfolio (Kieffer & Faust, 1993; Wolf 1991). With out adequate support and feedback on the structure and composition of a professional portfolio, teacher candidates run the risk of building a "scrapbook" portfolio that lacks self-reflection and true evidence of mastery of specific program outcomes and goals (Wolf, 1996).

As a result of the frustration associated with the initial attempt at creating electronic portfolios, a template for candidates to use in creating portfolios was constructed using Netscape Composer. The standard format established for the portfolios through the template served to facilitate a better candidate and faculty understanding of the expectations related to portfolio content. The template includes links to the education program outcomes at Central, as well as, to state education standards. The first screen of the template contains a table of the ten program themes, which links to ten tables containing the program outcomes. The program outcome tables in the template have blank columns from which candidates create links to artifacts and reflective narratives that they have constructed for each outcome at the experiential level, the application level, and the integration level.

Evaluation

The electronic portfolio is formally evaluated at three levels during the candidate's education program. At each level of evaluation, the candidate's portfolio must be presented with increasing content and level of complexity. With each of the formal evaluations a decision about the candidate's continuation in the education program is made based on the contents of the portfolio. A small team of faculty members from the Department of Curriculum and Instruction evaluates each candidate's electronic portfolio. The electronic portfolio is rated at all levels of review on appearance, function, quality of artifact selection, intellectual elegance, depth of reflection, and completeness. In the beginning the assessment rubric was very general and related more to the structure than the content. As the faculty used this general tool they realized they needed to provide different, more specific feedback to the initial level and one for the mid and final levels. And even at these later levels the rubrics have been refined to be more heavily focused on content and depth of the reflective narratives.

There are four possible ratings for the electronic portfolio at each level; 1) excellent, 2) satisfactory, 3) needs improvement, and 4) unacceptable. An excellent rating allows the candidate to continue in the program at the initial level, proceed to student teaching at the mid-level, and receive recommendation for certification at the final level of evaluation all with recognition of excellence. A satisfactory rating allows the candidate to continue in the program at the initial level, proceed to student teaching at the mid-level, and receive recommendation for certification at the final level of evaluation. A needs improvement rating indicates that the candidate may continue but must improve to a satisfactory rating before the end of the semester for enrollment in additional education courses, to student teach, or to be recommended for certification. With an unacceptable rating the candidate may finish the semester but must improve to a satisfactory level before enrolling for the next semester.

The initial formal review of the electronic portfolio generally occurs in the candidate's second or third semester of education courses around the end of the sophomore year or the beginning of the junior year. The initial formal review is conducted in conjunction with one of the required education courses. It occurs at the time of recommendation into the teacher education program and impacts that recommendation. At this level of review the candidates are expected to present artifacts with reflective narratives to address 20 outcomes with at least one in each of the ten theme areas, mostly at the

experiential level. Among the types of artifacts are lesson plans, a research paper, a philosophy of education paper, and a field experience reaction paper.

The mid-level formal review happens the semester before student teaching. The mid-level formal review is also conducted in conjunction with one of the required education courses. This review impacts the candidate's departmental recommendation for student teaching. Requirements at this level include addressing all program outcomes in ten of the ten theme areas supported by artifacts and reflective narratives. The outcomes at this review should be addressed mostly at the application level. Artifacts at this review should represent a higher level of understanding and complexity with the inclusion of artifacts related to strategies about instruction and assessment.

The final formal review takes place during student teaching, usually the month prior to the conclusion of the teaching experience. This review determines whether or not the candidate receives a recommendation for certification from the department. At the final review the candidate's portfolio should address all outcomes in ten of the ten theme areas at mostly the integration level. For this review artifacts will most likely have been replaced with more complex indicators of mastery of the outcomes. Artifacts from the student teaching experience, a video clip of the candidate teaching, and classroom management strategies are examples of the types of artifacts included at the final level of review.

Periodic self-review of the electronic portfolio is encouraged for candidates to monitor progress and identify areas that require increased attention through their educational experiences. The candidates are also encouraged to utilize a faculty mentor who is available to give guidance in the process of creating and revising the professional portfolio.

Change in the content, the focus, or the format of the electronic portfolio is likely to be necessary as goals are changed or more efficient methods for construction are discovered. The evolving process can be frustrating to candidates and faculty involved. When undertaking the implementation of electronic portfolios, continue to focus on the benefits of utilizing the multimedia format for professional portfolios with the understanding that flexibility throughout the learning process greatly enhances the final outcome.

Summary of Portfolio Data

Data has been collected over the last three semesters: Summer 2000, Fall 2000 and Spring 2001. In each of the first two semesters the majority of the teacher candidates' portfolios were rated as

satisfactory or excellent by the second evaluation. Whereas, in this current summer semester with only entry level students submitting portfolios, one-third of the students have yet to submit a portfolio. Of the two-thirds submitted, all have reached satisfactory level by the second evaluation.

The "not submitted" category for each semester and each level of portfolio reflects students who changed majors, or for a variety of reasons did not submit a portfolio for review. The high percentage of "not submitted" at the entry level for the summer, 2001 semester is a result of not only students failing to submit portfolios on time, but also due to the fact that several faculty evaluators were away at conferences, and international teaching experiences during the summer. It is noteworthy that the 95-96 percent of the fall and spring semester mid and final portfolios were rated at satisfactory or higher level.

These data reflect the end of the first year of portfolio implementation. Less than half of the entry-level students received intensive training prior to the submission of their first portfolio. At the mid level, which is evaluated just prior to student teaching, fewer that 25 percent of the students received prior training, and for the fall semester of student teachers, 2000, only about 15 percent had prior training. Because of the lack of intensive training for the mid level students, one of the instructors of the benchmark course did classroom mentoring with two/thirds of the students. The number of students who passed at the first evaluation at the mid level is a reflection of this additional work.

It should be noted that the students moving from the initial to mid to final reviews are not the same. There are very few students in this data set that are represented in multiple levels. The tables on the following pages illustrate semesters for which there are data.

Summary of Portfolio Data for Fall, 2000
for
Entry, Mid and Final Level Evaluations

Portfolio Level	Entry		Mid		Final	
Number of Students	77		77		66	
Number and percent passing at Satisfactory or Excellent level	#	%	#	%	#	%
First eval:	34	44.2%	64	83.1%	43	65.2%
Second eval:	32	41.6%	10	13.0%	20	30.3%
Third eval:	1	1.3%	0	0.0%	1	1.5%
Not submitted	7	9.1%	1	1.3%	2	3%
Percent of Students reaching Satisfactory or Higher level:		87.1%		96.1%		97.0%
Number and percent not reaching Satisfactory or Higher level after submission:	3	3.9%	2	2.6%	0	0.0%

What happens to students who do not reach satisfactory level?

Entry: Do not get recommended for Admission to Teacher Education and may not continue in EdCI and ScEd courses until they reach satisfactory level unless they consult with the evaluators and come to an agreement. Seven students never submitted a portfolio. Three are still at the needs improvement level.

Mid: Do not get recommended for Student Teaching. Three students were not recommended for Student Teaching and are not Student Teaching Spring, 2001. Only one of the three students not recommended failed to submit a portfolio.

Final: Do not get recommended for certification. Only two students failed to reach the satisfactory level or higher. One dropped out of Student Teaching and received and Individualized major without certification option. One failed to submit a portfolio and failed to take PRAXIS II and received an incomplete in Student Teaching and was not recommended for certification.

Summary of Portfolio Data for Spring, 2001
for
Entry, Mid and Final Level Evaluations

Portfolio Level	Entry		Mid		Final	
Number of Students	77		74		76	
Number and percent passing at Satisfactory or Excellent level	#	%	#	%	#	%
First eval:	37	48.1%	55	74.3%	55	72.4%
Second eval:	24	31.2%	16	21.6%	17	22.4%
Third eval:	1	1.3%	0	0.0%	0	0.0%
Not submitted	10	13.0	2	2.7%	2	2.6%
Percent of Students reaching Satisfactory or Higher level:		80.6%		95.9%		94.8%
Number and Percent not reaching Satisfactory or Higher level after submission:	5	6.5%	1	1.4%	2	2.6%

What happens to students who do not reach satisfactory level?

Entry: Do not get recommended for Admission to Teacher Education and may not continue in EdCI and ScEd courses until they reach satisfactory level unless they consult with the evaluators and come to an agreement. Ten students never submitted a portfolio. Five are still at the needs improvement level. After discussions with several of these students, they have indicated an anticipated change in major and/or University.

Mid: Do not get recommended for Student Teaching. One student, at this time is not recommended for Student Teaching and will not Student Teach Fall, 2001 unless the portfolio reaches satisfactory level by August 17, 2001. The two students who have not yet submitted a portfolio are not intending to student teach until spring, 2002, and their portfolios will be ready in the Fall semester.

Final: Do not get recommended for certification. Only two students failed to reach the satisfactory level or higher. Both had difficulties during student teaching and have, at this time, decided not to seek certification. Two failed to submit a portfolio, but are taking classes this summer and have until the end of August to submit and still be recommended for certification immediately after graduation. At this time there is no communication from these two students in regard to their portfolios.

Summary of Portfolio Data for Summer, 2001
for
Entry, Mid and Final Level Evaluations

Portfolio Level	Entry		Mid		Final	
Number of Students	27		0		0	
Number and percent passing at Satisfactory or Excellent level	#	%	#	%	#	%
First eval:	11	40.7%				
Second eval:	7	25.9%				
Third eval:	0	0.0%				
Not submitted	9	33.3%				
Percent of Students reaching Satisfactory or Higher level:		66.7%				
Number and Percent not reaching Satisfactory or Higher level after submission:	0	0.0%				

No mid or final level portfolios submitted in the summer.

What happens to students who do not reach satisfactory level?

Entry: Do not get recommended for Admission to Teacher Education and may not continue in EdCI and ScEd courses until they reach satisfactory level unless they consult with the evaluators and come to an agreement. Nine students never submitted a portfolio. Zero are still at the needs improvement level.

Summary of Portfolio Data for All Semesters
for
Entry, Mid and Final Level Evaluations

Portfolio Level	Entry		Mid		Final	
Number of Students	181		151		142	
Number and percent passing at Satisfactory or Excellent level	#	%	#	%	#	%
First eval:	82	45.3%	119	78.8%	98	69.0%
Second eval:	63	34.8%	26	17.2%	37	26.1%
Third eval:	2	1.1%	0	0.0%	1	0.7%
Not submitted	26	14.4%	3	2.0%	4	2.8%
Percent of Students reaching Satisfactory or Higher level:		81.2%		96%		95.1
Number and percent not reaching Satisfactory or Higher level after submission:	8	4.4%	3	2.0%	2	1.4%

Conclusions

Clearly, comprehensive training related to the construction of electronic portfolios is a key factor for reducing anxiety and frustration related to compiling and evaluating a web-based interactive portfolio. Training should be provided not only for teacher candidates but also for faculty that will provide support to candidates and evaluate candidate portfolios and to computer lab assistants that will encounter the portfolios through candidates' questions while working in the computer labs. Many teacher candidates and some faculty may lack experience working with various multimedia forums. Therefore, focusing one aspect of training on how to use various multimedia software, hardware, and equipment would be beneficial for those involved with electronic portfolios.

The data presented above display that a lack of information or understanding regarding the development of electronic professional portfolios presents an obstacle to a candidate's constructive effort toward building a portfolio. Informing candidates early and often of requirements and expectations for portfolio construction contributes to candidate success. As the assessment process had been refined, the assessment communication tools have provided more complete and complex information to the candidates.

Through ongoing implementation, training, assessment and refinement we expect the number of first evaluations reaching satisfactory or higher level to increase. Starting with the fall semester, 2001, most students will receive the intensive training at the appropriate time and will be submitting their portfolios in the planned sequence. The ongoing relationship with the mentor/evaluators should aid the process of successfully developing the portfolios over the candidates' pre-service experience. The process of assessing the pre-service candidates' web-based portfolios at three levels will contribute to their success as practicing professionals because they will be able to clearly articulate critical reflections on their practices.

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